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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/295,329

04/21/99

KAWABE

Y

Q54114

IM52/0517

MARK BOLAND  
SUGHRUE MION ZINN MACPEAK & SEAS  
2100 PENNSYLVANIA AVENUE N W  
WASHINGTON DC 20037-3202

EXAMINER

CLARKE, Y

ART UNIT

PAPER NUMBER

1752

DATE MAILED:

05/17/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

# Office Action Summary

Application No.

09/295,329

Applicant(s)

KAWABE ET AL.

Examiner

Yvette M Clarke

Art Unit

1752

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 14 March 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claims \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

## Attachment(s)

- 15) ☒ Notice of References Cited (PTO-892)
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 18) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 19) ☐ Notice of Informal Patent Application (PTO-152)
- 20) ☐ Other: \_\_\_\_\_

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### DETAILED ACTION

This is written in reference to application number 09/295329 filed on April 21, 1999 and CPA filed on September 9, 2000.

#### ***Double Patenting***

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2. Claims 1, 3, 8 and 14-15 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-16 of U.S. Patent No. 6159656 A. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claimed polymers (formula Ia, Ib, Ic and Id) of the said patent are all polymers having alicyclic hydrocarbon skeletons which become alkali-soluble by the action of an acid as claimed by the applicant.

#### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suwa (EP 789,278). Suwa teaches a radiation sensitive resin composition comprising a resin containing an alicyclic skeleton in its backbone (A), and acid generating agent (B), an acid cleavable additive, a nitrogen containing basic compound and additives such as surface active agents. The said resin A may contain at least one group which is cleaved by an acid at any position thereon. The alicyclic skeleton may optionally contain one or more substituents. The said resin is preferably a resin, which becomes alkali soluble due to catalytic action of an acid to cleave the acid cleavable groups. Preferred alicyclic skeletons are given by the general formula (2) (page 3, l. 20-15, l. 57). The taught acid generating agent can be selected from the group consisting of onium salts, halogen containing compounds, diazoketone compounds, sulfone compounds and sulfonic acid compounds (pg. 16, l. 1-pg. 17, l. 3). The said acid generators can be used singly or in combination of two or more. The acid generator is present in the amount of 0.1-10 pbw per 100 pbw of the resin (pg. 17, l. 4-9). Suwa teaches that the addition of an acid cleavable additive serves to improve contrast as a positive type photoresist and increase affinity of the resin for an alkaline developing solution. The said additive includes polymeric compounds or low molecular weight compounds having at least one acid cleavable group (pg. 17, l. 10-15). Specific examples include t-butyl adamantane carboxylate, cholic acid t-butyl ester, etc. (pg. 17, l. 58-pg. 18, l. 9). The addition of a compound which acts as a Lewis base to an acid generated from the acid generating agent improves perpendicularity of the side walls formed by a positive

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working resist system. Specific examples of such compounds include tri-n-butylamine, triethanolamine and 2-methylpyridine (pg. 18, l. 15-28). A variety of other additives can optionally be added to the resin composition. These additives include surface active agents such as FLUORAD FC430, FC431, SURFLON S-382, SC-101 and the like (pg. 18, l. 36-44). It is the examiner's position the taught FLUORAD compounds meet the limitation of a fluorine containing surfactant and the SURFLON compounds meet the limitation of a silicon containing surfactant. The said additives can be used singly or as a mixture of two or more. The composition solution is prepared by dissolving the taught components in a solvent. Suitable solvents include propylene glycol monoethyl ether acetate, 2-heptanone, methyl 3-methoxypropionate and ethyl 3-ethoxypropionate, ethylene carbonate, propylene carbonate and so forth (pg. 19, l. 5-26). The solvents can be used in singly or in a mixture of two or more. A variety of radiation types can be used to expose the resist composition. Examples include far UV radiation such as KrF and ArF (pg. 19, l. 30-37). In example 5, Suwa exemplifies a resin composition comprising resin AIII-4 (pg. 25, l. 25-pg. 26, l. 25), 4-hydroxynaphthyldimethylsulfonium triflate as an acid generating agent, tri-n-butylamine as the acid cleavable additive, and a solvent mixture of ethyl 2-hydroxypropionate and 2-heptanone (pg. 42, l. 35-pg. 43, l. 25; Table 2). It is the examiner's position that the exemplified acid generator meets the limitation of an onium salt and the said acid cleavable additive meets the limitation of a low molecular acid decomposable compound as claimed by the applicant. One of ordinary skill in the art would have been motivated by the teachings of Suwa to include either a single or a combination of two or more surface active agents into the

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exemplified composition of example 5 in order to improve the coating properties.

Although a solvent mixture of three components is not exemplified one of ordinary skill in the art would have been enabled by the teachings of Suwa to use two or more of the disclosed solvents to prepare the taught composition.

4. Claims 16-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suwa (EP 789,278) as applied to claims 1-15 above, and further in view of Niki (US 5,744,281). Suwa as discussed as above teaches all the limitations of the claims however it fails to exemplify the explicit use of a solvent mixture comprising 60-90% ethyl lactate and 10-40% ethyl 3-ethoxy propionate. Suwa exemplifies the use of a solvent mixture of ethyl 2-hydroxypropionate and 2-heptanone (see example 5) in a ratio of 173:406. It is the examiner's position that ethyl 2-hydroxypropionate and ethyl 3-ethoxypropionate are known variants and are considered equivalents in the art. Suwa teaches and ethyl 3-ethoxypropionate as a suitable solvent choice. Suwa fails to disclose ethyl lactate as a suitable solvent for the taught composition. However, it does exemplify the use of n-butyl acetate and discloses that ethyl acetate, n-propyl acetate and benzyl acetate are all suitable solvents (pg. 19, l. 10-25). The prior art reference of Niki teaches that ethyl lactate, butyl acetate, ethyl acetate and methyl lactate are all known equivalents of ester-type solvents in the art of photoresist compositions. Therefore, one of ordinary skill in the art would have been motivated by the teachings of Suwa and Niki to substitute ethyl 3-ethoxypropionate and ethyl lactate for the exemplified ethyl 2-hydroxypropionate and taught acetate compounds (i.e., butyl acetate, n-propyl acetate, ethyl acetate) of Suwa, respectively and expect reasonably

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similar results. Motivation is based on the idea that similar compounds will produce reasonably similar results.

### ***Response to Arguments***

5. Applicant's arguments filed March 14, 2001 have been fully considered but they are not persuasive. Applicants argue that the cited prior art of Suwa (EP 789278) and Niki (US 5744281 A) fail to teach or disclose the problem of development defects that can be improved by the use of the claimed combination of a basic compound and a surfactant containing either silicon or fluorine. Applicants further argue that the comparative examples of the specification clearly demonstrate the unexpected effects of the said combination.

6. In response to applicant's argument that the prior art fails to focus on solving the problem of the pending application, the fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985). Suwa teaches that a nitrogen containing basic compound can be used to improve the perpendicularity of the sidewalls of a photoresist pattern (pg. 18, l. 15-19). Suwa further teaches that a surface active agent can be added to improve coating properties, developability and so forth (pg. 18, l. 34-35). Examples of the said surface active agents include surfactant which contain silicon and fluorine. Therefore, one of ordinary skill would have been motivated to incorporate a nitrogen containing basic compound and a surface active agent into the photoresist composition of Suwa to obtain a composition which has

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improved coating properties and developability and a formed image which has improved perpendicularity in the side walls. The motivation of the prior art does not have to be that of the applicant.

7. The examiner has reviewed the comparative data presented in the applicant's specification. In example 4a, Applicants compare a surfactant outside of the scope claims (polyoxyethylene nonyl phenyl ether) with a surfactant within the scope of the claims (Megafac R08). However, this said comparative data fails to compare the closest prior art. A more convincing comparison would be to compare polyoxyethylene nonyl phenyl ether with a Megafac surfactant which is similar to those disclosed in the prior art (i.e., Megafac 171 or Megafac 173) rather than comparing to a surfactant such as Megafac R08 which contains both silicon and fluorine.

8. The prior art reference of Niki (US 5744281 A) is relied upon solely to teach that ethyl lactate, butyl acetate, ethyl acetate and methyl lactate are all known equivalents of ester-type solvents in the art of photoresist compositions. Therefore, one of ordinary skill in the art would have been motivated by the teachings of Niki to substitute ethyl lactate for the acetate compounds (i.e., butyl acetate, n-propyl acetate, ethyl acetate) of Suwa and expect reasonably similar results. Motivation is based on the idea that similar compounds will produce reasonably similar results.

9. The examiner hereby maintains the rejection of claims 1-22 as set forth previously and repeated above.



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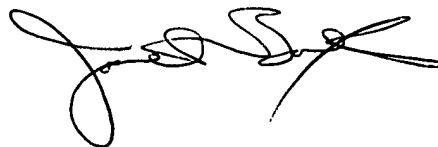
10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yvette M Clarke whose telephone number is 703-305-0589. The examiner can normally be reached on Monday-Thursday 7-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Janet Baxter can be reached on 703-308-2303. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-3599 for regular communications and 703-305-3599 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

ymc

May 10, 2001



JANET BAXTER  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 1700